

MASON NECK NATIONAL WILDLIFE REFUGE
Lorton, Virginia

MARUMSCO NATIONAL WILDLIFE REFUGE
FEATHERSTONE NATIONAL WILDLIFE REFUGE
Woodbridge, Virginia

ANNUAL NARRATIVE REPORT

Calendar Year 1987

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEWS AND APPROVALS

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Lorton, Virginia

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Calendar Year 1987

J. Andrew Miller 3/1/88
Refuge Manager Date

Thomas J. Anderson 3-21-88
Refuge Supervisor Review Date

Donald Young
Regional Office Approval

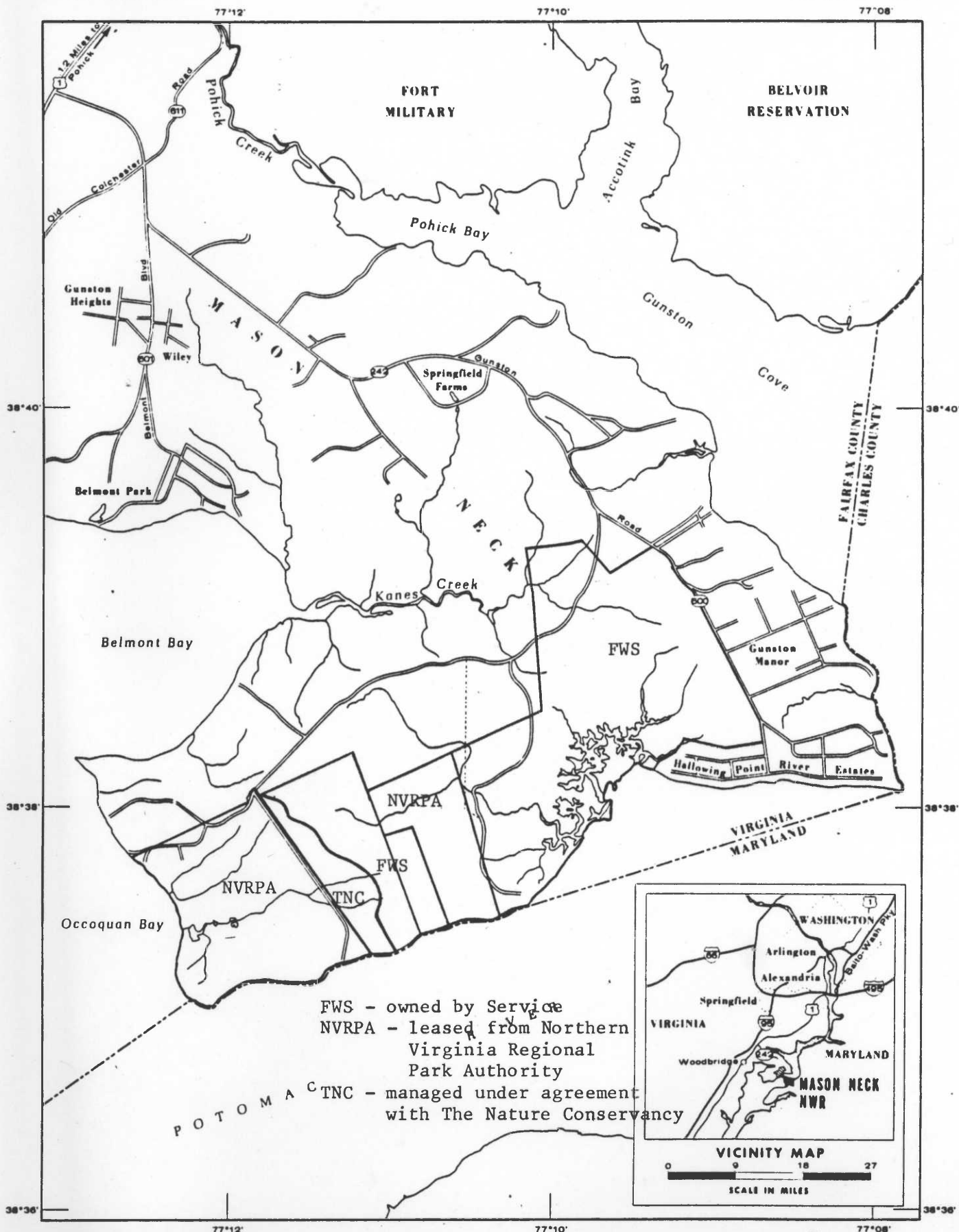
4/1/88
Date

MASON NECK NATIONAL WILDLIFE REFUGE

UNITED STATES
DEPARTMENT OF THE INTERIOR

FAIRFAX COUNTY, VIRGINIA

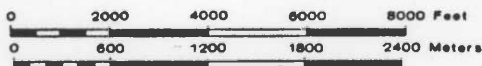
UNITED STATES
FISH AND WILDLIFE SERVICE



FWS - owned by Service
 NVRPA - leased from Northern Virginia Regional Park Authority
 TNC - managed under agreement with The Nature Conservancy



COMPILED IN THE DIVISION OF ENGINEERING
FROM SURVEYS BY O.S. AND B.S.F. & W.



BOSTON, MASSACHUSETTS

JULY 1974



MEAN
DECLINATION
1971

5R VA. 803

INTRODUCTION

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Aerial of Mason Neck NWR from Occoquan Bay showing wetlands used by eagles and extent of bluff erosion. DAD 11/86

INTRODUCTION

The Mason Neck National Wildlife Refuge is located in Virginia, 18 miles south of Washington, D. C. Nestled on an 8,000 acre boot-shaped peninsula jutting out into the Potomac River, the refuge is dominated by mixed hardwood and pine forests, high bluffs, and about 300 acres of freshwater marshes. From the initial acquisition of 845 acres in 1969, Mason Neck has grown to 2,277 acres, including 789 acres leased in 1982 from the Northern Virginia Regional Park Authority and 105 acres leased in 1987 from The Nature Conservancy.

The refuge was established in 1969 as the Nation's first bald eagle refuge using funds provided under the Endangered Species Act. Eagles have nested and wintered on the peninsula since before the 1700's. Currently, only one nest, located on leased land, is active and 30 to 40 eagles use the refuge during the winter.

Though located within easy driving distance for approximately 10 million residents of Virginia, Maryland, and Washington, D. C., the refuge has an annual visitation of less than 15,000 people. This is due to limited public use facilities and competition from over 400 nearby Federal, state, regional, county, and city parks.

Until 1974, the Mason Neck National Wildlife Refuge was a subunit of Blackwater National Wildlife Refuge. It then became an independent unit with a manager and two subunits of its own, Featherstone and Marumsco Refuges totalling 164 and 63 acres respectively.

The office is located in Woodbridge, Virginia, less than 9 miles from Mason Neck and only a mile from Marumsco and Featherstone refuges.

A. HIGHLIGHTS

Annual Christmas Bird Count record 42 eagles (Section G.2.).

March evaluation of eagle survey data indicates refuge supporting highest population of eagles in Chesapeake Bay - 67 birds or approximately 24 percent of the total Bay wintering population (Section G.2.).

Eagles successfully nest, producing one young (Section G.2.).

Golden eagle found dead in roost (Section G.2.).

Heron nesting colony breaks 500 with survey counting 524 nests (Section G.4.).

Last inholding acquired by The Nature Conservancy (Section C.).

Snowiest January in history starts year of most major snowstorms in one winter and wettest September in a decade (Section B.).

Refuge attempts to set record of most refuge managers in 1 year (Section E.1.).



First person in gets to dig out the equipment.

RBW 1/87

B. CLIMATIC CONDITIONS

Mason Neck's weather is governed by its location in the middle latitudes as well as being sandwiched between the Appalachian Mountains and the Chesapeake Bay. Temperatures rarely climb into the 90's or drop into single digits but frequent high humidity coupled to periods of stagnant air can make a day feel like it is over 100 or, with a cutting wind, well below zero. The area is occasionally touched by a wayward tropical storm but usually receives moderate rainfall and snowfall rarely measures more than a few inches.

Temperature-wise, the weather was close to normal. The only exceptions were a January which dipped below zero and a warm spell in May when temperatures remained in the nineties for several days tying local records.

Rainfall, including snow in its water equivalence, was a different matter. Though the total precipitation for 1987 nearly matched the 10 year average, this was a year of extremes. It started with the snowiest January on record including breaking the record for most snow in 24 hours (12.3"), then became the first recorded winter in the D.C. area to have three major snowstorms. This was followed by the wettest September in this decade, to be capped off in November with another major snowfall (10.8").

Table 1. Temperature Data

	1983		1984		1985		1986		1987		AVERAGE	
	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW
JANUARY	60	16	58	-9	63	-6	68	10	60	-4	59.6	3.4
FEBRUARY	61	0	70	15	75	14	67	12	56	14	61.9	11.2
MARCH	73	24	70	17	81	21	84	17	74	21	76.6	19.1
APRIL	89	30	84	31	94	19	83	35	85	29	85.6	29.7
MAY	85	37	91	34	87	35	90	31	92	41	89.2	37.5
JUNE	83	61	98	46	92	44	96	49	93	50	92.1	48.2
JULY	100	54	97	51	96	54	97	53	101	56	97.8	53.5
AUGUST	105	55	89	55	98	56	93	48	100	51	95.0	52.4
SEPTEMBER	100	36	92	44	97	44	92	44	88	44	93.4	43.2
OCTOBER	83	29	83	38	84	33	90	34	72	30	83.4	31.1
NOVEMBER	72	25	73	22	80	32	79	22	76	22	75.8	24.3
DECEMBER	54	-4	74	19	66	10	64	14	64	19	66.7	11.4

Table 2. Precipitation Records

<u>MONTH</u>	<u>YEAR</u>					
	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1887</u>	<u>AVG.</u>
JANUARY	2.10	1.83	2.30	2.52	4.03	2.89
FEBRUARY	3.13	3.24	3.43	3.73	1.28	2.45
MARCH	5.87	6.00	2.82	0.73	2.33	3.48
APRIL	8.73	3.95	0.18	2.06	3.76	3.30
MAY	2.09	3.94	5.33	1.22	3.44	3.54
JUNE	3.61	2.97	1.54	2.23	4.58	3.64
JULY	2.42	6.63	2.52	5.08	2.14	4.16
AUGUST	1.53	3.35	3.21	8.19	1.62	3.82
SEPTEMBER	3.36	2.19	5.89	0.83	6.96	2.74
OCTOBER	5.26	3.09	4.39	1.70	2.68	3.71
NOVEMBER	5.51	3.98	6.30	5.22	4.16	4.02
DECEMBER	5.00	1.25	0.63	5.83	3.11	3.05
TOTAL	48.61	42.42	38.54	39.34	40.09	40.80

C. LAND ACQUISITION1. Fee Title

The Nature Conservancy was able to purchase the last portion of the Jan King Evans' inholding which includes 105 acres of forestland. This wedge, cutting the refuge in two, is close to the eagle nest and its acquisition will help limit disturbances of the nesting pair. A management agreement between The Nature Conservancy and the Service will allow refuge staff to manage and protect this area until the Service can acquire it from the Conservancy. Acquisition is under way and was scheduled for FY87.

3. Other

The acquisition of the last inholding will complete the requirements placed on the Service under a lease agreement with the Northern Virginia Regional Park Authority for two tracts bisecting and fringing the refuge. The 60 year management lease requires the Service to acquire any inholdings, destroy any unused buildings or facilities, manage so as to protect the bald eagles, and provide for public use appropriate to the area. All other conditions have been met.

D. PLANNING

2. Management Plan

The Law Enforcement Plan was added to the list of draft plans including a Wildlife Inventory Plan, Safety Plan, and the first three chapters of the Management Planning Notebook under review at the station level. Further processing of these as well as development of a Forest Management Plan, Public Use Plan, and Sign Plan were delayed as the station underwent major personnel changes.

4. Compliance with Environmental Mandates

Refuge manager Stewart continued to be involved in discussions regarding a planned energy resource recovery/mass solid waste incinerator for Fairfax County, even after his transfer from the refuge to the Regional Office. Questions continue regarding the effects on air quality and disposal of the ash, considered to be hazardous waste. The plant would be located approximately 10 kilometers northwest of Mason Neck NWR.

Following reports of fish with tumors indicative of toxic chemicals and elevated contaminant samples being found in waters adjacent to the refuge and utilized by eagles for feeding and loafing, refuge manager Stewart contacted Ecological Services in Annapolis requesting a research project. Following receipt of special funding, resource contaminant analysis biologist Stephen Goodbred met with refuge staff to discuss possibilities and decided to examine elements of the eagles' food chain to determine probable hazards to the eagles as the major endangered species of the area. After discussion it was determined that samples including sediment, turtles, and catfish were to be collected. A fourth element, either waterfowl or crayfish (reported in some areas to be a dietary component) was to be determined later. These would be examined for heavy metals and organic pesticide contamination.

Collection began on September 16 with Stephen Goodbred, Dan Oddett (ES), and outdoor recreation planner Schultz set out nets and traps in Pohick Creek, Gunston Cove, and Accotink Creek. Samples of sediment and catfish were obtained but no turtles. A second attempt a week later again netted no turtles.

Results of tests on the collected samples will be reviewed before further collection efforts are attempted.



Steve Goodbred and Dan Oddett of Ecological Services trapping turtles. YMS 9/87

5. Research and Investigations

Mason Neck NR87 "Ecology of Nest Site Selection in Freshwater Turtles" 51610-4

Graduate student Steve Gotte continued monitoring of turtles in cooperation with Dr. Carl Ernst and in continuation of his own study. A report of status has been requested but not yet received.

Mason Neck NR87 "Research on the Eastern Box Turtle, *Terrapene c. carolina* at Mason Neck National Wildlife Refuge" 51610-5

Mark-recapture studies were continued and 223 turtles have been marked since the previous study by John Bayless. There have been 202 recaptures. Data collected have included cloacal and environmental temperatures, food habits, reproductive behavior, growth, movements, and seasonality. Data have not been analyzed as this is a long range (20 year) project, but all data has been computerized. A maximum-minimum thermometer has been placed in the woods and has yielded data for 12 months.

Twenty-five research days were involved in 1987. Four yielded no turtles. The other 21 days resulted in 94 total captures, including 50 recaptures, a capture rate of about two turtles/man hour. The turtles were active from mid-April to November 1.

Mason Neck NR87 "Biological Studies of Peoriline Moths (Lepidoptera,
Pyrallidae)"
51610-6

Dr. Jay C. Shaffer, George Mason University

STATUS - Inactive

Mason Neck NR87 "Population Ecology and Demography of Freshwater Turtles"
51610-7

Dr. J. W. Gibbons, University of Georgia

STATUS - Inactive

Mason Neck NR87 "Study of Seasonal Dynamics in Marsh Community Composition
of Great Marsh, Mason Neck NWR"
51610-9b

Carroll Curtis, Office of Environmental Quality

STATUS - Inactive

E. ADMINISTRATION

1. Personnel

This year will be remembered as the year of the temporary manager. Assistant manager Dewhurst had already transferred when refuge manager Stewart left for the Regional Office. This left both manager positions open. The Regional Office handled this by detailing assistant managers from other stations while Stewart's replacement was being selected. Regular staff were kept busy, first getting the new people here by sending maps and making reservations, then orienting the new manager, then wrapping things up for that one to go home and preparing for the next person. This made for an interesting time since the changes overlapped all of the end-of-year funding summaries and planning for the next fiscal year.

A summary of refuge staffing over the past 5 years is shown below:

<u>Fiscal Year</u>	<u>PFT</u>	<u>Temporary</u>	<u>Seasonal</u>
87	5	2	1
86	5	-	-
85	4	-	-
84	3	1	-
83	3	-	-



9 8 12 11 10 14

1. Thomas W. Stewart, Refuge Manager, GS-11, EOD 10/28/84, PFT, transferred 8/16/87
2. Jerre Gamble, detailed as Refuge Manager 8/23/87 - 9/5/87
3. Martin Kaehny, detailed as Refuge Manager 9/6/87 - 9/19/87
4. Jared Brandwein, detailed as Refuge Manager 9/20/87 - 10/3/87
5. Andrew C. French, detailed as Refuge Manager 10/4/87-10/16/87
6. J. Frederick Milton, detailed as Refuge Manager 12/07/87-12/11/87
7. Donna A. Dewhurst, Assistant Refuge Manager, GS-7, EOD 3/30/86, PFT, transferred 6/7/87
8. Yvonne M. Schultz, Outdoor Recreation Planner, GS-9, EOD 10/30/83, PFT
9. Barbara M. Mitchell, Secretary, GS-5, EOD 12/14/80, PFT
10. Robert B. Westerman, Maintenance Worker, WG-8, EOD 5/27/84, PFT
11. Stephen P. Boska, Laborer, WG-2, TFT
12. Mark F. Jones, Biological Technician, GS-5, TFT
13. Joe Marler, seasonal Laborer, EOD 6/9/87, separated 6/21/87
14. Malcolm Lawrence, Volunteer

Counting the two temporaries, this is the largest paid staff this station has ever had and the difference is noticeable. More biological work has been accomplished and refuge facilities and equipment are in the best repair than they have been for many years.

4. Volunteer Program

Volunteers contributed over 2,352 hours this year. The primary contributors were the Fairfax Audubon Society, scout groups, and eight very special people: Mark Jones, Mal Lawrence, Sue Haines, Larry Brindza, Erika Wilson, Elaine Haug, Kerri Kirkpatrick, and Frank Sayer. About 1,000 hours were spent on biological surveys and another 1,000 hours on maintenance with the rest going to photography, building and staffing displays, and administrative work.

Fairfax Audubon continued to be strong supporters of the refuge, celebrating their first anniversary of adopting the refuge on April 15 under their national Adopt-a-Refuge program. Their members logged over 347 hours in bird and plant surveys as well as 314 hours in maintenance and 100 hours in photography and constructing and staffing exhibits.



Fairfax Audubon's display at Spring Fling. MM 4/87



Audubon removing intruding vegetation before spreading wood chips at pavilion. YMS 8/87

Their program did suffer some after assistant manager Dewhurst's departure. She had done a tremendous job recruiting, training, and updating volunteers. However, Audubon was still very dependent upon her to supervise their weekend work parties and when she left, they had not reached a point of self-sufficiency. The rest of the refuge staff was too stretched to work with them on a weekly basis as in the past, reducing work sessions to one or two times a month. Mark Jones picked up much of Donna's burden, first as a volunteer himself (summer intern) recording 641 hours and later as a sidelight to his biological technician appointment. He too was stretched thin trying to continue Donna's studies, maintain the volunteer records, and assist with several rush maintenance jobs.

Another special person was Mal Lawrence who joined the refuge staff in October. Retiring from the Washington Post newspaper, he wanted to keep busy so he signed up to help out in maintenance. He now works half days supplying the refuge with a much needed third set of hands (working with Westerman and Boska) on construction projects and general maintenance.



GSA Troop #1405 with Take Pride certificate for their trail maintenance efforts. YMS 3/87

Scout groups again helped on several projects logging over 400 hours. The bulk of this was by Girl Scout Troop #1405 which comes out twice a year to help get the Woodmarsh and Great Marsh Trails ready to open, and three eagle scout candidates who worked on a nest box display, osprey platforms, and wood duck nesting boxes.

Volunteer Marvinna Munch showed her talent when she placed in both the regional and national levels of the Service's photo contest with pictures of leaping salmon and Alaskan mountains.

5. Funding

Funding was limited during FY87 with basically enough to cover salaries and a few needed ARMM's projects. A limited amount of add-on money was received for a bank-stabilization feasibility study (Soil Bioengineering - \$35,000), a water quality study (Accotink - \$1,000), computer equipment (\$6,000), and rehabilitation of the shop facilities (\$20,000).

The following table depicts the status of refuge funding over the last five fiscal years including the current fiscal year.

Table 3.

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Source</u>
1988	229,382:	
	229,382	1260
*1987	230,532:	
	230,532	1260
1986	189,679:	
	166,679	1260
	23,000	1520
1985	230,500:	
	197,000	1260
	33,500	1520
1984	124,000:	
	113,800	1260
	10,200	1520

*initially \$219,632 before removal and add-on of funds

6. Safety

There were two accidents this year resulting in injuries. On May 31 while participating in a heron colony survey, volunteer Elaine Haug stepped on a nail requiring minor first aid and a tetanus booster. The second accident occurred when staff were carrying a roofing truss. Two employees lost their grip and maintenanceman Westerman, who was left holding the huge truss, strained his back. This resulted in the first "lost-time" accident (2 days) that the refuge has experienced in several years.

Volunteer Anita Allen contracted Lymes disease but believed she picked up the guilty tick while leading a walk at a local county park, not on the refuge. This resulted in several of her bird walks being cancelled.

Topics for safety meetings included back injuries, use of a winch in vehicle extraction, fire management, removal of fallen trees hung up in other vegetation, and fire extinguisher placement.

F. HABITAT MANAGEMENT

1. General

Located along the Potomac River, 18 miles south of Washington, D. C., the refuge covers 2,277 acres of the 8,000 acre peninsula of Mason Neck. A portion of this (789 acres) is managed under a 60 year lease. An additional 105 acres of upland woodland including 2 acres of riverine wetland was leased from The Nature Conservancy in 1987.

	<u>Acres</u>
Woodland	1,883
Wetlands	364
Grassland	15
Brush	10
Administrative building + parking + roads	<u>5</u>
	2,277

2. Wetlands

The 364 acres of wetlands consists of 342 acres of palustrine and 22 acres of riverine habitat. Several small man-made impoundments exist on the refuge but are in poor condition and in need of repair and maintenance.

Vegetation sampling was accomplished again this year. Sampling was done by canoe. The method of sampling was by transects on Raccoon Creek, the Great Marsh and High Point Creek, and by the five-point sampling method on Raccoon Creek.

	<u>Percentages</u>	
	<u>1986</u>	<u>1987</u>
Wild rice - <u>Zizania aquatica</u>	35	29
Cut grass - <u>Leersia hexandra</u>	33	23
Bare ground	--	9
Halberd-leaf tearthumb - <u>Polygonum arifolium</u>	4	6
False stinging nettle - <u>Boehmeria cylindrica</u>	55	7
Mudwort - <u>Limosella subulata</u>	--	5
Grasses	10.2	1
Knotweed		
Spagnum moss		

The other 12 species accounted for 13 percent of the less abundant species.

The main channel of the Great Marsh consisted of:

	<u>Percentages</u>	
	<u>1986</u>	<u>1987</u>
Spatterdock - <u>Nuphar luteum</u>	24	18
Arrow arum - <u>Peltandra virginica</u>	19	17
Wild rice - <u>Zizania aquatica</u>	14	16
Bidens	<1	13
Cattails - <u>Typha</u> spp.	12	7
Bare ground	--	4
		25 other

The High Point Creek survey consisted of submerged aquatic vegetation (SAV) and some emergents.

	<u>SAV</u>	<u>Emergents</u>	
		<u>1986</u>	<u>1987</u>
Fanwort - <u>Cabomba caroliniana</u>	50		22
Duckweed - <u>Lemna</u> sp.		14	19
Frog bits - <u>Limnobiium spongia</u>		11	19
Coontail - <u>Ceratophyllum demersum</u>	25		9
Swamp loosestrife - <u>Decodon verticillatus</u>		17	8
Bladderwort - <u>Utricularia</u> sp.	25		5
Water primrose - <u>Ludwigia leptorarpa</u>		14	4
Spatterdock - <u>Nuphar luteum</u>			



A representative inhabitant of the marsh,
Bidens sp. DAD 9/86

Eight other less abundant species were also observed. Water depths averaged 2.1 feet in the channel.

Due to data being collected by different~~ly~~ investigators and variations in dates during which the surveys were conducted, major discrepancies in data can be explained.

Cuttings of hydrilla, Elodea canadensis, were found washed up in the Great Marsh. Fortunately, no established fragments were located along the shoreline or in the marsh.

3. Forests

The refuge is dominated by oak/hickory forest with localized areas of pine and cedar where houses and farm fields were abandoned and razed. Historically, a significant portion of the refuge forest was once logged as evidenced by the many wheel ruts cutting through the refuge and other localized logging disturbances.

A total of 36 species of trees have been compiled for a listing of Mason Neck flora.

5. Grasslands

Historically, about 200 acres of grassland once existed as farms and home sites. Several decades of succession returned much of these areas to woodlands.

Approximately 15 acres of grassland remains on the refuge in four plots. Four acres (2 acres of the environmental education field and 2 acres of the YCC field) were mowed in late spring to inhibit brushy species and promote grassland growth from seed dispersal. The 5 acre parcel near the environmental education pavilion is divided into three plots, each mowed on a rotational basis to demonstrate the process of succession.

In the interest of habitat diversity for species, i.e., woodcock, ruffed grouse, northern bobwhite and eastern wild turkey, plans are being prepared to create openings in the woodland area using firelanes for access.

9. Fire Management

There were no prescribed burns conducted on the refuge. Temporary staff was familiarized with equipment operation and maintenance. A semi-portable Pacific pumper was added to the fire equipment inventory in the summer.

10. Pest Control

The refuge cooperated with the U. S. Department of Agriculture in deploying and monitoring gypsy moth traps. In the spring, 24 pheromone and 20 delta style traps were placed in high public use areas on the refuge and Mason Neck State Park.

The total number of moths captured was 3,543, representing over seven times last year's capture total. Spiders and Japanese beetles also made significant trap appearances. Two female pupae were also observed and destroyed and a decaying tree on the adjacent State Park lands had at least seven female pupae.



Gypsy moths captured in pheromone traps
filling a gallon jar.

MFJ 7/87

G. WILDLIFE

1. Wildlife Diversity

Being located within a rapidly growing metropolitan area where habitat in general is being degraded, the integrity of the refuge's habitat and species diversity has remained high, owing in part to the relatively remote setting. The refuge provides an important balance among the state and local recreational areas who cooperate in managing the Mason Neck peninsula by managing for and protecting the wildlife resource through education, regulation and strict enforcement. Numerous animals routinely use the refuge including 211 species of birds, white-tailed deer, beaver, wild turkey, river otter, red and gray fox and muskrat, to name a few.

2. Endangered and/or Threatened Species

The Christmas bird count on January 3 yielded an all-time high count of 57 wintering bald eagles in the Mason Neck area (18 adults, 39 immatures). This totals close to twice that of last year's count of 33. The next highest count was 35 years ago when 31 eagles were observed.

In early May, Dr. Mitchell Byrd of the College of William and Mary flew an aerial survey of the refuge eagle nest as part of a Chesapeake Bay regional survey. At least one 8-week old bird was in the refuge nest.

During September, significant numbers of migrating eagles first began arriving when 3 adults and 14 immatures were counted. The influx of migrating eagles reached their peak on the December 8 survey when 23 eagles (3 adults, 5 subadults, and 15 immatures) were observed in the Kanes Creek roost.

In November, an immature golden eagle was found dead in the roost area. Subsequent necropsy determined the cause of death to be blunt trauma to the head. This is the first confirmed occurrence of a golden eagle on the Mason Neck peninsula since 1982.

Although the Chesapeake Bay bald eagle banding project terminated in 1986, refuge personnel along with Craig Koppie, formerly of the National Wildlife Federation, inspected the nest and banded what turned out to be a 12-week old bald eagle. This nest was the same one as last year and has been used in 1977, 1978 and 1985. This was the only eagle banded in Virginia for 1987. A total of 18 banded or marked eagles were identified this year. Most of these individuals were banded in Virginia and Maryland.



Eaglet being banded. DAD 5/86



Susan Haines, a bald eagle enthusiast, examines dead eagle found in roost while maintenance worker Westerman looks on.

MFJ 11/87

3. Waterfowl

Although the refuge does not usually support large numbers of waterfowl, nearby open water and refuge wetlands attract moderate numbers (9,315) of over-wintering puddle and diving ducks.

Waterfowl populations declined in February (1,563) from their peak of 2,982, rebounding in March (2,246). During each of the following months until September, the population size is stable from 100-300 ducks. In

October, population increases were marked by the arrival of migrating waterfowl such as pintail, shoveler, widgeon, scaup and blue and green-winged teal. At least 20 species of waterfowl over-winter on the refuge. Canvasbacks, redheads, ring-necked ducks, and lesser and greater scaup were each represented by 1,000 or more in December. Other notable populations include ruddy duck (370), common merganser (319) and hooded merganser (75).

Waterfowl production estimates are not well documented, however, volunteer survey teams have provided some useful observations. Their estimates of 90 wood ducks and 30 Canada geese fledged for this year seems to be credible. No wood duck nest box use was reported this year. Some nest boxes were erected too late for the nesting season. Others were not maintained due to eagle nest area closure.

In September, eagle scout Andrew Wolcott constructed and installed 10 wood duck nest boxes under the guidance of biological technician Mark Jones. The total number of nest boxes on the refuge is now 41.

4. Marsh and Water Birds

Large communities of water birds consisting of 14 species such as heron, egret, bittern and cormorant, often use the refuge shoreline and wetlands. Most abundant are great blue heron, great egret and green heron.

Black crowned-night heron, great blue heron, green heron, great egret and least bittern have nested on the refuge. Red-necked grebes were seen for the first time this year in December.

The great blue heron nesting colony located on High Point Creek is one of the largest on the East Coast. With the aid of seven experienced local birding volunteers, a May transect inventory of the nesting colony was conducted. A total of 524 nests were counted representing a 7 percent increase from 1986. The nesting colony has rapidly increased (over 17 times) since first being discovered in 1979. Only 30 nests were present that year.

	<u>Active</u>	<u>No. Nests</u>	<u>No. Young</u>	<u>Total</u>
1979	---	30	26	86
1980	---	51	61	122
1981	102	127	152	305
1982	122	152	175	365
1983	158	198	238	475
1984	230	288	346	691
1985	316	395	474	948
1986	388	485	582	1,164
1987	419	524	629	1,258

Based on 1.5/nest.
80 percent of total nests active.

Up to 13 nests were observed in a single tree with the average being 3 nests/tree. During the survey, 24 dead and 2 live young were found on the ground under the colony. This represents a mortality rate of 6 percent at the time of the survey.



The growing High Point Creek heron rookery contained 524 nests in 1987. DAD 5/86

5. Shorebirds, Gulls, Terns and Allied Species

At least 24 species represented by this group uses the refuge. Killdeer and American woodcock nesting has been documented. These species tend to be most easily observed in spring and summer. This year, great black-backed, herring and ring-billed gulls exhibited increases in population with ring-billed gulls reaching over 600 in February from only 300 last year. In April, at least 60 common snipe were reported. Virginia rail, spotted and solitary sandpiper, greater and lesser yellowlegs were occasionally observed in May.

6. Raptors

Fifteen species of raptors are reported to visit the refuge. Nesting has been documented for red-shouldered, broad-winged and red-tailed hawks, osprey and American kestrel. The osprey nested on a State water boundary marker located off High Point. It is not known if their efforts were successful. However, osprey nesting on a hunter's blind in the Kanes Creek area fledged one young. Northern harriers were commonly observed wintering in the Great Marsh.

Great horned, barred, screech and barn owls have also nested on the refuge.

8. Game Mammals



This was a banner year for bambi production. YMS 5/87

Population estimates for white-tailed deer are documented but not fully reliable. Population surveys and pellet counts since 1977 range from estimated of 18 to 207 deer. Estimate data is lacking for the past 3 years. Incidental field observations and several spotlight counts were useful for establishing population dices (35, refuge; 62, State Park). The index for the refuge is low however. Some key survey areas were closed at the time of the spotlight counts. It was estimated that at least 165 deer are using the refuge.

Although this data may be lacking, the prominent browse lines and vegetation damage, particularly in the Sycamore Road area, is evidence of an overpopulation problem.



Ornamental ivy once covering this wall, was stripped by hungry deer.
MFJ 11/87

The plan to implement a controlled hunt continue as we build our case to justify it. Cooperative agencies on Mason Neck agreed that an overpopulation problem exists. At this point, because of the lack of firm numbers and more evidence of poor herd health, we feel that we cannot yell "fire" until we see smoke.

- 10. Other Resident Wildlife

In July, a rehabilitated box turtle was released at the end of Sycamore Road.

In the second year following construction of the environmental education pond, a number of species have taken residence there such as spring peeper, chorus, leopard and bull frogs, spotted salamander, eastern painted turtle, leeches, snails, water boatman and many other aquatic organisms.



Eastern painted turtles line up on a log on Raccoon Creek.

MM 5/87

12. Wildlife Propagation and Stocking

Twenty-three bluebird nest boxes were monitored weekly from April to the end of August by refuge volunteers. A total of 18 nest boxes were used out of the 23 in place. Bluebirds were reported nesting in eight, with Carolina chickadees and prothonotary warblers making up the difference (8 for 44 percent and 2 for 12 percent respectively). Bluebird clutch sizes ranged from 3 to 5 eggs and were successful in fledging 27 young of the 58 eggs laid in boxes. The Carolina chickadees fledged 29 out of 39 eggs. The warblers were 100 percent(!) fledging 9 young out of 9 eggs.



Volunteer Sue Becker checks bluebird nest box. DAD 5/87



Prothonotory warblers found this artificial nest structure suitable--at the rear of the refuge dump truck. YMS 5/87

16. Marking and Banding

There was no attempt to band black ducks this year because of low duck numbers, frozen water and low staff numbers.

The wildlife management intern marked 12 white-tailed deer using paint-loaded syringes via a capchur gun. This chemical marking scheme had limited success. Some marked animals were observed again, but with the advent of fall and hair color changes on the deer, the paint marks became less apparent and later eventually disappeared.



As seasonal pelage transition began, capchur marked deer lost their respective paint stains. DAD 4/86

H. PUBLIC USE

1. General

Visitation is actually believed to be about the same this year as last year with the figures shown below differing due to an alternate way of calculation. Staff are still working with two traffic counters, one hose/air pressure and one infrared beam, which frequently malfunction and are investigating other methods of measuring visitation. During the early part of the year, visitation was calculated by the number of cars entering the parking lot over the counter's air hose and by brochure use. After the air hose was accidentally cut, calculations were by the number of brochures used and an index factor.

At least one confusing element of the calculations was reduced this year. In the past when the state park was charging its entrance fee, some visitors had parked at Woodmarsh and walked or bicycled into the park to avoid what they thought was an excessive charge (\$1.50/car). This year since the fee booth was only staffed part time with an honor system instituted, many people just drove on into the park. Some did pay the fee but many ignored the signs leaving this method of collection in doubt.

Visitors can access the Woodmarsh Trail during daylight hours from April 1 until November 30 and the Great Marsh Trail from December 1 until March 31. However, the 8:00 a. m. to 4:30 p. m. limitation was removed this year due to staff time required to open and close the parking lot and heavy use by many people who were still entering early or late by walking around the gate. The extended hours have caused no problems.

There is still confusion between the Mason Neck NWR and Mason Neck State Park. People show up at the wrong locations for programs or constantly call the other agency for information. Visitors are told they may wander anywhere in the park and then find refuge staff telling them that this does not apply once they enter the refuge as staff chivvy them back onto the proper trail system. One aid to help solve this problem arrived in October after more than a year of waiting for approval and printing. For the first time in 4 years the refuge has a general brochure with map and answers to most of the visitors' questions.

Two other possible solutions are under development. The first is a joint agency brochure detailing what visitors may see and do (and not do) on the Mason Neck Management Area. This area includes the refuge, Mason Neck State Park, Gunston Hall Plantation, and Pohick Bay Regional Park. A draft was put together 3 years ago by park personnel. That was four interpreters ago, and the draft was lost with their frequent turnovers.

Another solution with a growing volunteer program might be to develop a cadre of trail walkers, trained volunteers who wander the trail on busy days to answer questions and act as a self-actuating verbal brochure. It is believed that they would serve as a resource to puzzled or lost visitors, provide a physical presence which would encourage visitors to ask before acting, and act as a mental deterrent to those who know they should not do something.

In cooperation with the other agencies in the Mason Neck Management Area, the refuge participated in the Spring Fling - Discover Mason Neck Open House. This was intended to be a coordinated effort to introduce the public to the different agencies on the peninsula by each having special events. The coordination was limited to all scheduled activities being on the same weekend to share crowds and advertising. The refuge planned to sponsor a litter pickup with the theme "Take Pride in Mason Neck," host an information booth, and open the environmental study area to the public.

Fairfax Audubon was to help staff the booth and displays at the pavilion. Drenching rains curtailed activities on Saturday as well as cancelling plans at the environmental study area. Despite the weather and changes in plans, staff and volunteers still made contact with about 550 people, including those drawn by the volksmarch at the state park. Plans are already in the works for 1988.



Joint refuge and Fairfax Audubon display at Woodmarsh Trail parking lot for Spring Fling. MM 4/87

Table 4. Visitation

ENVIRONMENTAL EDUCATION

<u>YEAR</u>	<u>TOTAL VISITATION</u>	<u>STUDENTS</u>	<u>TEACHERS</u>	<u>% TOTAL</u>
1981	6,966	2,205	277	36
1982	4,689	1,012	330	29
1983	5,271	673	48	14
1984	7,265	844	89	13
1985	8,110	959	111	13
1986	15,113	1,998	172	14
1987	13,239	1,777	293	16



Biological consultants of tomorrow plan how they would save an endangered species. YMS 5/87

2. Outdoor Classrooms - Students

Environmental education continues to make up a large portion of the refuge's visits. This year it constituted 16 percent even though there were fewer students and 15 fewer programs. Part of this drop relates to lower demand by scout groups (tied up with anniversary celebrations) and staff demanding larger groups before scheduling programs. Groups of less than 10 were encouraged to use a self-guided trail on their own.

Another reason is the loss of the Prince William County SIGNET (gifted) program. This group had been coming on alternate years, producing 250+ students over 4 days and working independently with minimal staff contact. The teachers who were quite good were, as usually happens, promoted and no longer work directly with students. Contacts with their replacements are still being developed.

The pavilion is still paying off by giving groups a focal point from which to start and providing shelter during unpleasant weather. This year wasps were only an occasional problem and there were no black widow spiders. One copperhead snake did take up residence near the pavilion to keep life interesting.

The main portion of the environmental education field is mowed on an annual basis in three rotating strips. One is mowed each year resulting in an area less than 1 year old, one between 1 and 2 years, and one over 2 years old. Teachers encountering this found it interesting and promotion of the area for its comparative value will be continued. Marymount College especially enjoyed the strip mowing and came back to study it several times.

One encouraging note - no groups called this year for field trips after having been turned down due to fear of terrorism. This happened to several groups last year who had planned to go into Washington, D. C. It was a sad way to get an influx of groups.



High school freshmen learn by studying plots. YMS 10/87

Teachers now have a new interpretive tool (and distraction when students need a short project) thanks to Boy Scout Eagle candidate George Kiett. His project was to complete a display of nesting structures for groups to view at the environmental education pavilion. His structures include two for robins, three variations for bluebirds, wood duck and kestrel boxes, an osprey platform, and a cut-away of a purple martin house.



BSA eagle scout candidate Kiett and friends construct nest
box display. YMS 5/87

Table 5. Environmental Education - Students

<u>YEAR</u>	<u>MONTH</u>												<u>TOTAL</u>
	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>	
1982	0	0	50	218	166	279	41	83	0	115	26	34	1,012
1983	0	0	0	297	255	0	0	0	0	47	90	14	673
1984	0	0	14	0	494	129	22	0	0	144	27	14	844
1985	0	0	0	34	522	0	110	0	140	133	20	0	959
1986	0	10	0	579	840	20	35	0	24	366	124	0	1,998
1987	0	9	16	335	604	258	89	0	0	362	104	0	1,777

Table 6. Comparison of 1987 to 1986: Breakdown of Environmental Education by Presenter

(**Bold type** = 1987, normal type = 1986, CBF = Chesapeake Bay Foundation, Other = Colleges, Private Organizations, etc.)

<u>Presenter</u>	<u># Programs</u>	<u># Students</u>	<u># Activity Hours</u>
FWS staff	23 (46%)	1,068 (60%)	2,575 (49%)
	38 (58%)	1,422 (71%)	3,250 (57%)
CBF	12 (24%)	247 (14%)	1,376 (26%)
	18 (28%)	386 (19%)	1,899 (33%)
Other	15 (28%)	462 (26%)	1,324 (25%)
	9 (14%)	190 (10%)	568 (10%)

3. Outdoor Classrooms - Teachers

ORP Schultz conducted seven Project WILD workshops and three mini-workshops with a total of 168 participants. Most were by special request. Three were requested by George Mason University for student teachers with a short session in the classroom followed by a field trip to the refuge. One was requested by the Fairfax County School System for their gifted/itinerant teachers since the county has recently adopted Project WILD as a unifying curriculum for their gifted program. The last was requested to train parents who would be going on a week's camping trip sponsored by a local elementary school for their fifth grade.

The three mini-workshops were an offshoot of a discussion with Nancy Welker, science curriculum specialist for the third, fourth, and fifth grades in Prince William County. Ms. Welker has since received a grant to put their discussion into action with teachers across the county from each other using Project WILD activities, then having their classes correspond to compare results. If this initial portion works, field trips will be added with corresponding classes meeting face to face, discussing activities, and trying a few activities together. Mason Neck NWR is one of the proposed sites for these gatherings but may be bypassed because of the number of students involved, possibly over 200 at a time when the grades combine.

In response to teachers' requests for more hands-on training the refuge tried to sponsor a summer series of workshops, scheduling two sessions a month. Topics included studying ponds, forests, meadows, plant identification, tools for studying nature, warblers, tracking wildlife, bird banding, and waterfowl identification. The series was dropped after poor turnouts. Part of the problem seemed to be advertising and scheduling during the heat of the day on Saturdays in the summer. A revised version may be tried next spring because many teachers liked the idea and are still requesting these sessions.

The third attempt at Bay Days, a workshop about the Chesapeake Bay for adults and teachers was not successful. The event is cosponsored by the refuge, Mason Neck State Park, the Northern Virginia Regional Park Authority, and the Citizens Program for the Chesapeake Bay. The format was changed from a very structured 2-day workshop for adults to give participants more freedom. Both the seafood luncheon and pre-registration were eliminated to reduce costs and staff planning time. The schedule was then adjusted to provide participants with a choice of activities including family oriented activities and a children's program. Participants could take part in as few or as many activities as they wanted and could start at any time throughout the day. The event was also moved to earlier in the fall. Drenching rains, the loss of commitment through pre-registration, no luncheon as a come-on, and the timing (too early for teachers to be thinking about picking up new material) resulted in only nine participants. The peak population was seven, outnumbered considerably by presenters. A modified form, halfway between the very structured 2-day seminar of the past and a multi-session festive day is tentatively planned for next year as a last try for this workshop.

Table 7. Environmental Education - Teachers

<u>YEAR</u>	<u>MONTH</u>												<u>TOTAL</u>
	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>	
1982	0	0	4	24	32	39	7	90	94	21	7	12	330
1983	0	0	0	28	20	0	0	0	0	0	0	0	48
1984	0	0	0	0	2	0	0	50	24	13	0	0	89
1985	25	0	10	0	0	0	0	0	0	50	26	0	111
1986	0	0	22	21	30	0	0	12	1	66	20	0	172
1987	0	76	28	8	13	25	44	4	88	7	0	0	293

4. Interpretive Foot Trails

Despite the change in calculating visitors, trail use was not far behind last year's numbers (1987 - 7,441; 1986 - 8,202). Use of the refuge's Woodmarsh Trail and Great Marsh Trail is on the rise with the parking lots frequently being full on nice weekends. During December, an estimated 600 people used the Great Marsh Trail, overflowing the parking lot most weekends and regularly emptying the brochure box. Most come hoping to see an eagle while others are just casual visitors looking for trails to hike. An interpretive brochure for this trail is under development.

The Woodmarsh Trail brochure, ordered in the late summer of 1986, arrived in October of 1987 with two pictures mislabelled and listing the wrong refuge address. Still, it is a big improvement over the previous brochure, out of print for several years, and the temporary brochure people have been using. The new brochure will be used in the spring of 1988 when the trail reopens and volunteer Mal Lawrence has had a chance to rearrange the marker posts to match the brochure.

6. Interpretive Exhibits and Demonstrations

Final touches were put on the kiosk at Great Marsh Trail. It displays three panels prepared by Wilderness Graphics and should provide an appropriate introduction to many of the visitors discovering the refuge for the first time.

Two of the panels in the display shed on the Woodmarsh Trail were changed for the spring open house. One features the eagles of Mason Neck and the "Take Pride" logo while the other discusses species of concern and the Chesapeake Bay.

Exhibits were set up at the Fairfax Fair with an estimated visitation of over 100,000 and at the local Gunston Fun Fair.

Eagle scout George Kiett completed a display of birdhouses and nesting structures at the environmental education pavilion.

7. Other Interpretive Programs

Refuge volunteer Anita Allen conducted morning bird walks and evening "owl hoots" but her schedule was cut from last year due to her illness (Lymes disease) and time commitments giving programs at two county parks.

Veterans Memorial Park again scheduled two canoe trips to the refuge (spring and fall) and Mason Neck State Park added regularly scheduled canoe tours of the Great Marsh to their schedule.

ORP Schultz helped out for 1 day at the Annual Duck Stamp Contest in Washington, D. C. Staff shortages back at the refuge prevented her participation during the second day of the event.



Veterans Memorial Park makes its semi-annual visit to the refuge.

YMS 9/87

11. Wildlife Observation

Birders were happy to see the new Bird List brochure, even if they had waited over a year for it. Assistant manager Dewhurst worked with volunteer Erika Wilson on its content while artist and eagle authority Jackson Abbott did the two eagle drawings.

What appears to be a very high deer population has also brought out the visitors. It was not uncommon to count 20 to 30 deer along the roads in the middle of the day.

16. Other Non-Wildlife Oriented Recreation

The Volksmarchers came back. The refuge denied them a permit in the spring after informal discussions to limit possible disturbance to the eagles and reduce conflict with visitors during the first warm months when visitation is normally high. However, the state park granted the permit and the march took place during the Spring Fling and constituted a large portion of the event.

They were granted a limited permit in the fall for the 20K portion of their walk with the 10K portion remaining on the park. The route was changed several times in the early stages, excluding a stretch along the river which turned out to be used more heavily than anticipated by eagles. The route finally used by about 50 marchers covered the Woodmarsh Trail and Sycamore Road to the short environmental education trail and pond, then back to Sycamore gate.

No problems were encountered on or by the refuge but several problems occurred on park land. ORP Schultz requested and received a wrap-up session from the Volksmarchers. The consensus was that the Volksmarchers would be moving on due to several minor conflicts and the limited facilities. They were a good group and should do well in a better setting.

17. Law Enforcement

There have been repeated incidents of dogs seen or heard running on the refuge and on several occasions they have challenged volunteers and staff, backing them off the trails. Maintenance man Westerman has caught and returned several to their owners after educating them as to the problems of free-running dogs and the penalties.

The refuge has been delayed converting over the processing its own notices of violation and relations with the agents have been strained dating back to the previous senior resident agent. Relations with the closest special agent though have been good with the latest word that he is checking into getting staff Conservator of the Peace status. This would simplify enforcement along the refuge's convoluted boundary.

Deer carcasses along the boundary are not uncommon since local poachers have so many targets to choose from. Staff have teamed with park personnel to check out several dead deer found on shared boundaries.

A minor jurisdictional conflict arose when a dead eagle was reported in the roost. The state park superintendent challenged the authority of refuge personnel to enter and recover the bird and then proceeded to pick it up himself without consulting refuge personnel. Fortunately the local special agent was available to explain jurisdictions as a semi-disinterested third party. Staff have since met with park personnel to settle their differences and improve communications.

The eagle, when sent off to the Madison Health Lab was found to have died of blunt trauma, possibly from tangling with another eagle. It was also a surprise to learn that it was an immature golden eagle, an unusual occurrence in this area.

Two new shotguns were received, replacing antiquated and dangerously non-functioning weapons that will be recommended for disposal.

ORP Schultz and maintenance man Westerman shot for requalification in September in front of Jerre Gamble on the refuge's small range. Both scored in the 280's.

I. EQUIPMENT AND FACILITIES

1. New Construction

Maintenanceman Westerman completed the new kiosk at Great Marsh Trail. It is a real asset to orienting casual visitors and groups using the trail.

Planning started on a septic system for the shop. Permits through Fairfax County took longer than expected. Completion should take place in FY88.

New roads, along old logging trails, were opened to provide access to the three proposed sites for cliff stabilization.

2. Rehabilitation

Maintenanceman Westerman took on a major piece of rehabilitation in construction of an addition to the current shop. Permission for the addition was given by the Northern Virginia Regional Park Authority which owns the land and building and leases them to the Service. The addition doubled the size of the building, provided for an office, full bathroom, and two vehicle bays, one of which is aligned to form a drive-through bay. Wiring, associated with the addition, was added to the fuel building and pole shed, modified in the original shop, and a new roof was installed on the old portion of the shop.



Rear of shop with old roof and beginnings of addition. MFJ 8/87



New roof and addition doubling size of building. MFJ 9/87

A storage area was enclosed in the end of the pole shed to provide storage for tools and a possible work area for volunteers.

The maintenance yard was expanded to provide more storage room and compensate for the space taken for the addition. A new access road was cut to the back of the yard and an extra gate installed during the expansion so that delivery trucks can now drive through.

4. Equipment Utilization and Replacement

A rhino scraper blade was received from Presquille NWR. This will help in maintaining the gravel roads.

The John Deere tractor, after many flats, was outfitted with liquid filled, supposedly puncture resistant tires.

It took 4 months, four project leaders, and several trips to the shop but the Kubota tractor finally made it back to the refuge. In for transmission problems, Aalquip managed to ignore the tractor for several weeks, let functioning parts rust, loosen bolts not associated with requested repairs, run the battery down, and then finally fix the transmission at almost double the quoted price.

A 500 gallon fuel tank on a trailer was picked up from Blackwater NWR. It has proved its worth by saving staff time in several ways. Maintenance personnel no longer have to take vehicles 8 miles to get them fueled and the secretary no longer has to fight with so many credit card charges.



The new fuel tank underwent rigorous inspections. YMS 9/87

6. Computer Systems

After being on the list for several years and refuge manager Stewart fighting hard to get a unit, it finally arrived after he left. The station received a PC's Limited 286 IBM compatible, Mitsubishi color monitor, and NEC Spinwriter 8800 printer.

Volunteer Frank Sayer set up the unit, loading the software that came with the unit and started tutoring secretary Mitchell and ORP Schultz in its use. Additional tutoring has been received from volunteer Erika Wilson.

7. Energy Conservation

Insulation and sheetrock walls were installed in the shop to cut down on the loss of heat during the winter.

J. OTHER ITEMS

1. Cooperative Programs

The Mason Neck Management Area superintendents have now been meeting quarterly for a full year. Topics tackled have included a name, local signing, a joint brochure, snow removal, gypsy moths, signing on the main highway, cooperative law enforcement, a coordinated open house (Spring Fling), Bay Days, and most recently the deer overpopulation problem. The forum setting has been useful and an excellent way for each agency to stay in touch, share capabilities, and head off misunderstandings.

3. Items of Interest

Donna Dewhurst, as the new regional uniform committee representative, left January 12 to attend a 1 week meeting in Nashville, Tennessee.

Robert Westerman attended Basic Fire Management training at Chincoteague NWR from February 23 - 27.

Robert Westerman attended Basic Law Enforcement training from March 21 - May 22.

Stephen Boska attended a 1 day firefighting training session at the Mason Neck State Park on March 17.

Barbara Mitchell attended a 1 week Administrative Workshop in Williamsburg, Virginia, starting March 16.

Yvonne Schultz attended LE refresher at Eastern Shore NWR in March.

Thomas Stewart attended LE refresher at Eastern Shore NWR in April.

Donna Dewhurst attended Basic Refuge Management Academy in Blair, Nebraska from April 29 - May 15.

4. Credits

J. Frederick Milton edited and reviewed the narrative.

Yvonne Schultz and Mark Jones wrote the narrative.

Yvonne Schultz and Barbara Mitchell typed the narrative.

Everybody helped assemble the narrative.

Photographs used were taken by Yvonne Schultz, Mark Jones, Donna Dewhurst, Marvin Munch, and Robert Westerman.

K. FEEDBACK

First, a sincere thank you to the assistant managers who were detailed here as temporary project leaders. Times were difficult with the loss of a popular supervisor, juggling construction projects, and tying together loose ends for the old fiscal year and starting a new one. Each manager became involved, trying hard to help despite their short tenure.

Mason Neck had the same gripes that most stations have: it takes too long to pay creditors, it takes even longer to correct leave and pay records, secretaries should be able to advance beyond GS-5's as administrative officers, and money was never enough to do the job as it should be done.

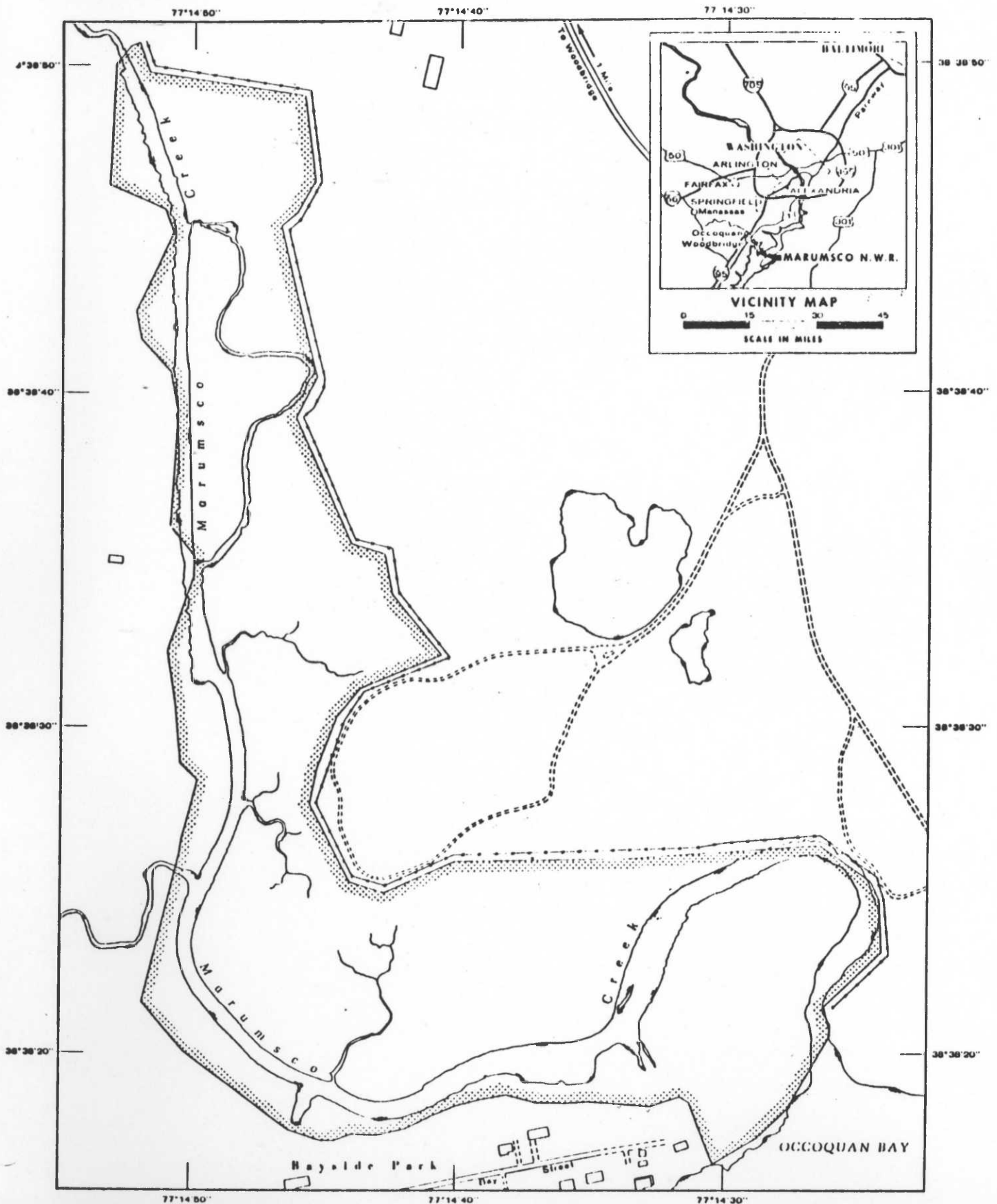
Still, for the most part, 1987 was a good year. Staffing was the highest ever which permitted many projects, especially long overdue maintenance, to be accomplished. Surveys resulting in good solid data were standardized for eagles, waterfowl, bluebirds, herons, and aquatic vegetation. Teachers in the area have come to look upon the refuge as a dependable source of information and material as well as an interesting and educational field trip. Despite staff changes and a few rough spots, 1987 was a year of accomplishment and satisfaction, setting the tone for a new year of striving for goals and reaching them.

MARUMSCO NATIONAL WILDLIFE REFUGE

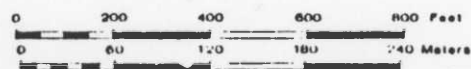
UNITED STATES
DEPARTMENT OF THE INTERIOR

PRINCE WILLIAM COUNTY, VIRGINIA

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE



COMPILED IN THE DIVISION OF ENGINEERING
FROM SURVEYS BY G. E. AND B. J. A. W.



BOSTON, MASSACHUSETTS

FEBRUARY 1974

Magnetic
True North

MEAN
DECLINATION
1971

INTRODUCTION

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6. Computer Systems - Nothing to Report
7. Energy Conservation - Nothing to Report
8. Other - Nothing to Report

J. OTHER ITEMS

1. Cooperative Program - Nothing to Report
2. Other Economic Uses - Nothing to Report
3. Items of Interest - Nothing to Report
4. Credits 5

K. FEEDBACK

MARUMSCO NATIONAL WILDLIFE REFUGE
Woodbridge, Virginia

INTRODUCTION



Aerial of Marumsco NWR looking northward from creek mouth. UNK 4/74

Marumsco National Wildlife Refuge is an unmanned satellite of Mason Neck Refuge. Marumsco is located 3 miles west of Mason Neck at the mouth of Marumsco Creek where the Creek joins the Occoquan Bay. The Refuge is approximately 20 miles from Washington, D. C., in Prince William County, Virginia.

Marumsco Refuge was established in 1973 from lands declared excess by the U. S. Army. Conveyance of the property to the U. S. Fish and Wildlife Service was simply a transfer between Federal agencies. Title remained vested in the United States. One transfer limitation was written that security of the research and development operation of the adjacent Harry Diamond Laboratories must be maintained.

The Refuge consists of 63 acres of freshwater tidal marsh. Topography is almost entirely flat, tidal marsh with elevations of sea level to less than 10 feet.

The only public use consists of visitors viewing the refuge from a trail on the adjacent Prince William County Veterans Memorial Park, or by people entering by canoe from Occoquan Bay.

F. HABITAT MANAGEMENT

1. General

Of the 63 acres comprising Marumsco Refuge, 57 acres is lacustrine wetlands with 3 acres of palustrine wetlands and 3 acres of upland woodlands.

No active habitat management was performed this year.

2. Wetlands

In October, a canoe vegetation transect was conducted. The lack of submerged aquatic vegetation was attributed to siltation of the creek behind the beaver dam and from high sediment loads carried in by tidal influx.

The emergent vegetation consisted of:

	<u>Percentages</u>	
	<u>1986</u>	<u>1987</u>
Arrow arum - <u>Peltandra virginica</u>	32	17
Spatterdock - <u>Nyphar luteum</u>	28	13
Virginia knotweed - <u>Polygonum virginianum</u>	15	11
Tickseed-sunflower - <u>Bidens</u>	1	11
Pickernelweed - <u>Pontederia cordata</u>	5	6
Wild rice - <u>Zizania aquatica</u>	2	6
Marsh mallow - <u>Hibiscus</u> spp.	-	6

Other species (15) were less abundant but composed 30 percent of plants observed. This represents seven more species than last year's survey results.

3. Forests

Common species along the Marumsco banks include white oak (Quercus alba); red maple (Acer rubrum); white ash (Fraxinus americana); black locust (Robinia pseudoacacia); and black gum (Nyssa sylvatica). These species and others occupy the 3 acres of woodlands on Marumsco.

G. WILDLIFE

2. Endangered and/or Threatened Species

Bald eagles are infrequently observed on Marumsco. This year, adult birds were most often seen in early morning hours.

3. Waterfowl

Mallards, Canada geese and wood ducks reside year-round on the refuge. Mallards and wood ducks are the only known nesters. Twenty wood ducks were estimated to have been produced this year. Up to 60 Canada geese and 200 mallards used the refuge in January. Hooded mergansers and green-winged teal were also present during the year in significant numbers.



Waterfowl wintering on Marumsco NWR. DAD 2/87

4. Marsh and Water Birds

Great blue herons are common residents of Marumsco. Great egret, little blue heron and green heron were also observed.



Virginia rail retrieved by well-meaning students in a school yard ready to be released into a quiet marsh. YMS 4/87

5. Shorebirds, Gulls, Terns, and Allied Species

Killdeer, common snipe and yellowlegs commonly forage along creek banks. Ring-billed gulls occur daily in numbers ranging from 15 up to 750 during the winter. Herring, greater black-backed, Bonaparte's and laughing gulls were also observed.

8. Game Mammals

Beaver are very active on Marumsco Creek. Their population is estimated at 20+. Because of clogged culverts and tree damage, the Virginia Department of Game and Inland Fisheries live trapped four beaver for transport to a local reservoir.

H. PUBLIC USE

3. Outdoor Classrooms - Teachers

One Project WILD workshop was held at Veterans Memorial Park adjacent to Marumscow NWR. Over 30 teachers signed up as well as many of the park staff. ORP Schultz and assistant manager Dewhurst conducted the workshop which was well received. Relations with the park management went so well during this session that future workshops will also be considered for this location.



Project WILD Workshop held in Veterans Memorial Park gymnasium.
DAD 3/87

J. OTHER ITEMS

4. Credits

J. Frederick Milton edited and reviewed the narrative.

Yvonne Schultz and Mark Jones wrote the narrative.

Barbara Mitchell typed and assembled the narrative.

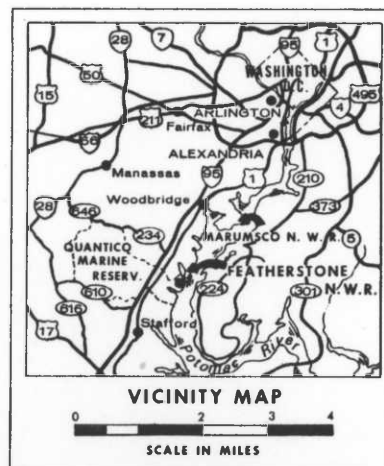
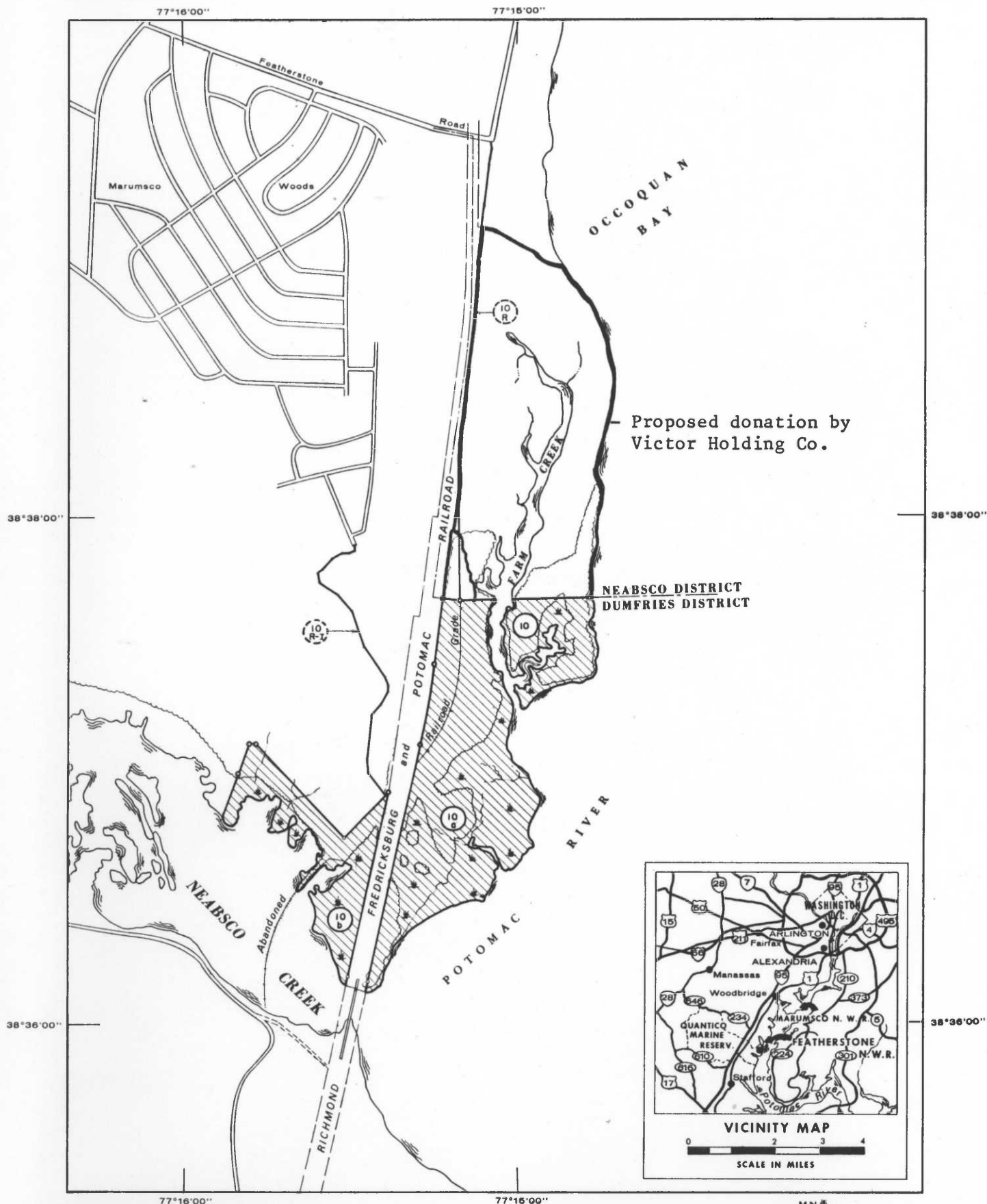
Photographs used were taken by Yvonne Schultz, Robert Westerman, and Donna Dewhurst.

FEATHERSTONE NATIONAL WILDLIFE REFUGE

UNITED STATES
DEPARTMENT OF THE INTERIOR

PRINCE WILLIAM COUNTY, VIRGINIA

UNITED STATES
FISH AND WILDLIFE SERVICE



COMPILED IN THE DIVISION OF REALTY
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8. Other - Nothing to Report

J. OTHER ITEMS

1. Cooperative Program - Nothing to Report
2. Other Economic Uses - Nothing to Report
3. Items of Interest - Nothing to Report
4. Credits

FEATHERSTONE NATIONAL WILDLIFE REFUGE
Woodbridge, Virginia

INTRODUCTION



Aerial view of Featherstone NWR looking north. Area considered for donation is located above dam in lower center. RBW 8/87

Featherstone National Wildlife Refuge is an unmanned satellite of Mason Neck Refuge, located 4 miles southwest of Mason Neck at the mouth of Neabsco Creek, where it joins the Potomac River. The refuge is approximately 22 miles from Washington, D. C., in Prince William County, Virginia.

Featherstone Refuge, acquired in 1979 from the District of Columbia, was originally proposed to be one unit of a 17 refuge Potomac Estuary National Wildlife Refuge Complex. No additional Federal acquisitions have since been made in this plan proposed in 1970.

The refuge contains 164 acres of woodland and freshwater tidal marsh located along the northern mouth of Neabsco Creek, around Featherstone Point and along the Potomac River. Topography is almost entirely flat, with patches of bottom land hardwoods and tidal marsh. A Richmond, Fredericksburg and Potomac Railroad (RF&P) right-of-way traverses the refuge from north to south with built up elevations of 80 feet. An abandoned railroad grade also circuits the refuge. Farm Creek passes through the northeastern portion of the refuge as it enters the Potomac River.

No public use is permitted on Featherstone, although a considerable amount of unauthorized activity does occur. The refuge has received reports of some illegal hunting but has not been able to confirm or deny these reports due to poor accessibility and limited staff time.

C. LAND ACQUISITION

3. Other

In a continuation of negotiations begun in 1986, the Victor Holding Company, Incorporated of Washington, D. C., the Prince William County Planning Commission and the Service are attempting to come up with a satisfactory plan of development for a parcel of land bordering the refuge. Basically, in return for donating approximately 169.5 acres (the complete northern portion of Farm Creek) to the Service, (via the County) reducing the number of units planned, rerouting drainage directly into Occoquan Bay, and contributing funds to mitigate impacts to schools, parks, highways, and mosquito control, Victor hopes to obtain a permit to construct 39 single-family homes.

The Service's involvement began when the Victor Holding Company requested that the Service agree to vacate a right-of-way that extended through their property. Victor planned to use that portion of the parcel to construct 142 townhouses.

Victor was also applying to the County to exceed the standard number of units per acre, rezone from commercial to residential, fill portions of the parcel considered to be within the 100 year flood plain, and divert all drainage into Farm Creek.

The holdup with the County had been how development in this area would affect current traffic patterns and how the company would mitigate these problems. The Service had concerns regarding the buffer zone between the development and the lands to be donated and the donation procedure itself.

Victor's rezoning request was approved by the County Board in November. Currently, plans call for the land to be donated first to the County who would then donate it to the Service, leaving open the possibility that the transfer could break down before the Service gains possession of the land.

F. HABITAT MANAGEMENT

1. General

Featherstone Refuge covers 164 acres of which 104 acres is palustrine wetlands and 60 acres of upland woodlands. No complete species list has been written for flora and fauna for this refuge.

There was no active habitat management this year.

2. Wetlands

Canoe vegetation transects were conducted on Farm Creek and Beaver Creek. However, time did not permit performing the 5-point sampling technique. The following species composition was collected:

	<u>Percentages</u>	
	<u>1986</u>	<u>1987</u>
Spatterdock - <u>Nyphar luteum</u>	29	17
Virginia knotweed - <u>Polygonum virginianum</u>	7	13
Pickernelweed - <u>Pontederia cordata</u>	9	15
Arrow arum - <u>Peltandra virginica</u>	13	13
Cattails - <u>Typha</u> spp.	14	7
Marsh mallow - <u>Hibiscus</u> spp.	4	6
Three square - <u>Scirpus americanus</u>	3	2
Lizard tail - <u>Saururus cernuus</u>	4	.05

A total of 16 species of relative abundance were recorded as opposed to last year's total of 19.

The lack of submerged aquatic vegetation was attributed to heavy sediment loads present from the tidal influx of Occoquan Bay.



Vegetation survey results may have been affected by fall die-off.

DAD 10/86

G. WILDLIFE

2. Endangered and/or Threatened Species

Historical records indicate bald eagles once nested on the refuge. No nesting has been documented since 1959, although eagles are observed flying to and from the refuge during eagle surveys on Mason Neck.

3. Waterfowl

Migrating waterfowl reached peaks of 100 wood ducks, 50 blue-winged teal, 50 black ducks, and 75 mallards. Canada geese have reached populations of about 60, common and hooded mergansers, lesser scaup and American coot were also represented.

4. Marsh and Water Birds

The dense marsh vegetation is diverse and attractive to many marsh birds. Great blue heron and great egrets frequent the creek banks and marsh edges. Old pilings serve to perch double-crested cormorants.

6. Raptors

On March 6, refuge staff erected three osprey platforms. During their erection, an osprey was observed. This sighting constitutes a new record for early arrival along the Potomac River.

Northern harrier, red-tailed and red-shouldered hawks were also observed using the refuge.

8. Game Mammals

Three active beaver lodges were observed in October along Beaver Run.

J. OTHER ITEMS

4. Credits

J. Frederick Milton edited and reviewed the narrative.

Yvonne Schultz and Mark Jones wrote the narrative.

Barbara Mitchell typed and assembled the narrative.

Photographs used were taken by Robert Westerman and Donna Dewhurst.